CANDIDATE AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Potentilla basaltica

COMMON NAME: Soldier Meadow cinquefoil, basalt cinquefoil

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: February 2002

STATUS/ACTION (Check all that apply):
X New candidate
___ Continuing candidate
_ Non-petitioned
___ Petitioned - Date petition received: ___
___ 90-day positive - FR date: ___
___ 12-month warranted but precluded - FR date: ___
_ Is the petition requesting a reclassification of a listed species?
___ Listing priority change
Former LP: ___
New LP: ___
Latest Date species first became a Candidate: _____
___ Candidate removal: Former LP: ___ (Check only one reason)
___ A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
___ F - Range is no longer a U.S. territory.
___ M - Taxon mistakenly included in past notice of review.
___ N - Taxon may not meet the Act's definition of "species."
___ X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Rosaceae (Rose Family)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Nevada and California

CURRENT STATES/ COUNTIES (optional)/TERRITORIES/COUNTRIES OF OCCURRENCE: Humboldt County, Nevada and Lassen County, California

LEAD REGION CONTACT (Name, phone number): Diane Elam (CNO) 916-414-6464; Wendi Weber (RO) 503-231-6131

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Jody Fraser, Nevada Fish

and Wildlife Office (775) 861-6300; Susan Moore, Sacramento Fish and Wildlife Office,(916) 414-6630.

BIOLOGICAL INFORMATION (Describe habitat, historic vs. current range, historic vs. current population estimates (# populations, #individuals/population), etc.):

Potentilla basaltica is a low growing, rhizomatous, herbaceous perennial that was first identified in 1982. The type specimen was collected in 1983, and the species was described by Tiehm and Ertter (1984). The species is known only from Soldier Meadow in Humboldt County, Nevada, and Ash Valley in Lassen County, California. It is restricted to moist meadows and seeps and their margins in alkaline, sandy soils between 1,320 and 1,555 meters (m) (4,330 and 5,100 feet (ft)) elevation (Knight 1990).

Potentilla basaltica begins flowering in May and continues through the summer (Knight 1990). It is believed that this species is capable of self-pollination (Knight 1990); insect pollination has not been documented or researched (Service 1997). Little research has been conducted to understand the life history of this species, its ecological requirements, population biology, and genetic variability.

In Nevada, P. basaltica has been documented from 10 small occurrences in Soldier Meadow in Humboldt County, that was known to total about 84,000 individuals in 1990 (Knight 1990). Soldier Meadow is located at the northern extreme of the western arm of the Black Rock Desert in the transition zone between the Basin and Range Physiographic Province and the Columbia Plateau Province. This region is characterized by cold, dry winters influenced primarily by cool, polar air masses, and by hot, dry summers influenced primarily by warm, tropical air masses (Nachlinger 1991). Soldier Meadow lies between the Calico Mountains to the west and the Black Rock Range to the east. The vegetation is broadly classified into four wetland communities and three upland communities, one of which is considered transitional. The wetland communities support a tremendous diversity of plants, with over 60 different species identified in the marshes, seeps, and meadows. As many as 45 thermal springs occur in the area at elevations ranging from 1,320 and 1,393 m (4,330 and 4,570 ft) (Nachlinger 1991). Some of the springs provide the only known habitat for the desert dace (Eremichthys acros), a federally-listed species endemic to approximately 20 springs in Soldier Meadow (Knight 1990).

Potentilla basaltica is associated with alkali meadows, seeps, and occasionally marsh habitats bordering the perennial thermal springs, outflows, and depressions in the meadow (Service 1997). The meadows and springs systems in the Black Rock region typically support moist to saturated soils and are dominated by short to moderately tall perennial grasses and herbs (Nachlinger 1991). The alkali marshes generally have standing water of variable depth. Cover density is high, comprised of medium tall to tall vegetation, consisting primarily of grasses (Nachlinger 1991). Potentilla basaltica occurs along the mesic margins of streambanks where water temperature extremes are moderated (Knight 1990). The plants are not typically found in habitats adjacent to downstream reaches of the spring outflows, possibly due to higher nutrient

concentrations, richer soils, and/or increased salt accumulations (Knight 1990).

Five of the Soldier Meadow occurrences are found within the boundaries of an Area of Critical Environmental Concern (ACEC)/Research Natural Area (RNA) designated by the Bureau of Land Management (BLM) in 1983 to protect the desert dace and its habitat (48 FR 2598). This land designation theoretically offers protection to these five occurrences of P. basaltica which represent about 30 percent of the known areal extent of the species in Nevada. In 1992, The Nature Conservancy negotiated a land acquisition and conservation easement with the owners of the Soldier Meadow Ranch. Negotiations included the purchase of 736 hectares (ha) (1,820 acres (ac)) of desert dace habitat and the conservation easement encompassed 2,085 ha (5,150 ac). These lands were subsequently transferred to the BLM for permanent protection of the species. Also, the BLM acquired an additional 106 ha (262 ac) of desert dace habitat directly from the Soldier Meadow Ranch (Service 1997). The lands acquired through these transactions encompassed the remaining 70 percent of the known P. basaltica habitat in Nevada. Despite extensive surveys of all spring systems in the Soldier Meadow area, this species has only been observed within an area of about 28 ha (70 ac) (Nachlinger 1991).

In northeastern California, P. basaltica is known from only one small occurrence on private lands in Ash Valley near Ash Creek, where fewer than 1,000 individuals were observed in 1993 (California Department of Fish and Game (CDFG), Natural Diversity Data Base (NDDB), 2002). This population was found on the sub-alkaline border between a meadow system and the sagebrush-conifer ecotone, in an area previously disturbed by road construction (Service 1997). Vegetation cover is generally sparse, and associated species include sagebrush (Artemisia tridentata), various rush species (Juncus spp.), sedge species (Carex spp.), and buttercup (Ranunculus occidentalis) (CDFG, NDDB, 2002). This site is presumed extant; however, surveys to relocate the species have not been conducted. Also, surveys in the vicinity of Ash Valley, and between Ash Valley and Soldier Meadow, have failed to located any additional populations (Service 1997).

THREATS (Describe threats in terms of the five factors in section 4 of the ESA providing specific, substantive information.

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

In general, populations of P. basaltica are distant from urban centers; however, these areas are popular for recreation and are often affected by livestock grazing. While all of the occurrences of P. basaltica are currently presumed extant, all are being severely affected by land uses within and around Ash Valley in California and the Black Rock region in Nevada (CDFG, NDDB, 2002; Selena Werdon, Service, pers. comm., 2002; Nachlinger 1991; Knight 1990).

Various direct impacts to P. basaltica populations and habitat have occurred in past years and continue to affect the species, including channelizing spring outflow for livestock and

recreational uses; trampling by livestock; degradation or elimination of habitat for agriculture, livestock grazing, and recreational uses; development of hot springs and camping areas; roads and off-highway vehicle activity; geothermal exploration; and introduction of invasive, nonnative species (Knight 1990).

The physical alteration of the spring systems and upland habitats in Soldier Meadow began well over 100 years ago, and the region has been used for livestock grazing for decades (Service 1997). Many modifications to the landscape have occurred historically to accommodate these various uses. Changes to the hydrological regime through permanent and seasonal water diversions have resulted in the loss or alteration of P. basaltica habitat, as well as habitat that once supported the desert dace (Service 1997).

The spring systems and riparian areas that support this species are attractive to native and domestic grazers due to the presence of water, succulent vegetation adjacent to streams, and gentle topography (Minshall et al. 1989). Grazing affects the landscape by altering, reducing, or eliminating vegetation. Springs and riparian areas are negatively affected through channel widening, bank degradation, lowering of the water table, and increased sedimentation into streams (Service 1997).

Potentilla basaltica is directly affected by grazing through the removal of vegetation which can expose soils, increase erosion potential, modify the hydrologic regime, and encourage invasion by nonnative species (Nachlinger 1991). Grazing has negatively affected nearly all of the P. basaltica occurrences through the loss of individuals and trampling of habitat. This activity has caused a decline of the species and the quality of its habitat in the Soldier Meadow area as it is part of an active grazing allotment (S. Werdon, pers. comm., 2002).

Recreational use of the spring systems include bathing in the thermal springs and camping in the immediate vicinity of the outflows. Users have constructed rock dams and excavated the outflows to create deep pools that accumulate silt and sand (Service 1997). Due to their proximity to the springs, P. basaltica plants are subject to damage associated with these activities (Nachlinger 1991). August through October is the highest recreational use period for this area, when the species is still flowering and beginning to produce fruit. Recreation use is encouraged by the gentle topography of the meadows and the prevalence of access roads (Service 1997). Increased use of the spring systems for bathing and the upland sites for camping has resulted in the severe degradation of several P. basaltica sites. Between 1994 and 1995, visitor use had increased by 4,000 12-hour visitor days (BLM 1998). Today the area is becoming a well-known recreation area due to the highly popular Burning Man Festival held yearly about 48 kilometers (30 miles) south of Soldier Meadow and drawing some 45,000 visitors from all over the world. The visibility of the area has also increased due to the designation of the Black Rock Desert National Conservation Area in 2000 (Roger Farschon, BLM, pers. comm. 2002). In some areas, the landscape has been denuded of vegetation and soils have been compacted, offering little opportunity for reestablishment of the species (S. Werdon, pers. comm., 2002).

To gain access to these areas, recreational users and allotment permittees utilize a network of roads, many of which are not authorized or maintained. This has resulted in fragmentation and degradation of the habitat. In addition, off-road vehicle tracks have been observed in the meadows where users have traversed the area to reach a spring or campsite (S. Werdon, pers. comm., 2002; Nachlinger 1991).

The Soldier Meadow area was subject to intensive geothermal exploration in the 1970s. The maximum temperature of the aquifer was deemed insufficient to support economic development at that time; however, future exploration and resource development of this type could affect the groundwater system supplying the thermal spring habitat that supports the P. basaltica (Service 1997). Some portions of the species' habitat are protected from exploration and development activities through the ACEC/RNA designation for the desert dace (Service 1997).

The wetland communities occupied by P. basaltica have also been subject to invasion by nonnative plant species. Some of the common nonnative species include, but are not limited to, smotherweed (Bassia hyssopifolia), Russian olive (Elaeagnus angustifolia), peppergrass (Lepidium perfoliatum), low whitetop (Cardaria draba), and cocklebur (Xanthium strumarium) (Nachlinger 1991). These nonnative species may compete with or displace native species including P. basaltica in disturbed areas or under conditions that favor their growth (Service 1997). Invasion by nonnative species also causes degradation of native habitats and can result in monotypic stands of undesirable species.

The most significant threats to the species continues to be recreational use of spring outflows for bathing, camping in the upland areas, and livestock grazing and associated activities. Current habitat conditions in Soldier Meadow as they relate to these activities and ecosystem health have not been monitored or quantified and are therefore difficult to discern; however, qualitative assessments of the area over time suggest that areas in and around the springs which support P. basaltica and the desert dace are steadily declining in habitat value (S. Werdon, pers. comm., 2002).

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Sites that are used for recreational bathing and camping are highly disturbed. As visitation increases in this area, impacts to the species and its habitat will become more severe.

C. Disease or predation.

Potentilla basaltica is not known to be palatable to livestock or wildlife. Other than livestock trampling of the plants and its habitat discussed above, no disease or herbivory has been observed at any of the populations (Knight 1990).

D. The inadequacy of existing regulatory mechanisms.

Potentilla basaltica was designated as a category 1 candidate species on February 21, 1990 (55 FR 6184). On July 26, 1995, this species was reassigned to category 2 candidate status and subsequently designated a species of concern (61 FR 7462). This designation was assigned as a result of portions of the habitat coming under Federal (BLM) jurisdiction in 1993.

The BLM classifies P. basaltica as a sensitive species. As such, the BLM is directed to manage for sensitive species and their habitats and consider these resources during project planning (BLM Manual 6840); however, no specific management guidelines to ensure the conservation of this species are currently being implemented.

Potentilla basaltica is not currently listed by the State of Nevada but is considered threatened by the Nevada Native Plant Society (Nevada Natural Heritage Program 2001). It is on the California Native Plant Society's (CNPS) 1B list (plants considered rare, threatened, or endangered in California and elsewhere). All plant species on the CNPS 1B list meet the definitions under the Native Plant Protection Act (Sec. 1901, Chapter 10) and the California Endangered Species Act (Secs. 2062 and 2067) of the CDFG Code, and are eligible for State listing. The species is not listed by California under its State Endangered Species Act, but plants on the CNPS 1B list must be fully considered during the environmental documentation process under the California Environmental Quality Act (CEQA) (Skinner and Pavlik, eds. 1994). However, CEQA only requires disclosure of a project's impacts on the species; it does not provide protective management for P.basaltica.

E. Other natural or manmade factors affecting its continued existence.

Two reservoirs have been created at the south end of Soldier Meadow, and within the valley, many of the spring outflows have been channelized. Water courses have been altered from historic patterns. The introduction and spread of Russian olive along the riparian zone is also likely to affect water flows (Knight 1990), which in turn influences soil moisture and other habitat characteristics.

BRIEF SUMMARY OF REASONS FOR REMOVAL OR LISTING PRIORITY CHANGE:

FOR RECYCLED PETITIONS:

a. Is listing still warranted? ___
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? ___
c. Is a proposal to list the species as threatened or endangered in preparation? ___
d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

LAND OWNERSHIP (Estimate proportion Federal/state/local government/private, identify non-private owners):

The Ash Valley, California, population of P. basaltica occurs on private lands. In Nevada, about 30 percent of the Soldier Meadow occurrences are found within the boundaries of desert dace ACEC/RNA managed by the BLM, Winnemucca District. The remaining 70 percent also occur on lands managed by the BLM, which do not have any special designation (Service 1997).

PRELISTING (Describe status of conservation agreements or other conservation activities):

Potentilla basaltica habitat is within the Hot Springs pasture of the Soldier Meadow Allotment which has been grazed by cattle for decades. In 1993, changes in the period of use and number of cattle on the pasture were implemented. These changes in livestock use were intended to reduce the potential for adverse effects on the habitat and protect P. basaltica and the desert dace populations (Service 1997). Studies to evaluate and monitor the effectiveness of the new grazing system were included as part of the Soldier Meadow Allotment Management Plan; however, to date, these studies have not been conducted.

Other efforts to ensure conservation of the P. basaltica, including the Recovery Plan for the Rare Species of Soldier Meadows (Service 1997), Soldier Meadow Activity Plan (BLM 1998), and informal consultations conducted with the BLM, articulated conservation measures and recommendations that, to date, have not been implemented. In addition, this species was not considered in the BLM's designation of the desert dace ACEC/RNA because it does not have Federal protective status. The Recovery Plan included P. basaltica to ensure the long-term protection of the species. According to the Recovery Plan, this objective would be met when the abundance and distribution of the species is considered stable or increasing within the 10 subpopulations for 3 years, and when habitat modification and competing nonnative species no longer adversely affect the long-term survival of the species (Service 1997).

In 1998, BLM completed the Soldier Meadow Activity Plan and Environmental Assessment (Plan). The Plan is designed, among other things, to (1) address impacts to special status species from increased recreation, livestock and wild horse and burro grazing, and potential geothermal and mineral development and (2) implement management actions and protect habitat for P. basaltica. Some portions of this Plan have been implemented including increased area use monitoring and enforcement. However, limited resources and the remote nature of the site have made it difficult to implement most of the specific actions. Almost 4 years have passed since the Plan was finalized, yet visitor use areas have not been designated, allowing for continued dispersed use of the area which negatively impacts P. basaltica and its habitat. The Plan integrated all resource management activities in the allotment, including preservation and protection of P. basaltica and desert dace (BLM 1998). The management direction included in this document for these species has not been implemented.

REFERENCES (Identify primary sources of information (e.g., status reports, petitions, journal publications, unpublished data from species experts) using formal citation format):

Bureau of Land Management. 1998. Final Soldier Meadow Activity Plan and Environmental

Assessment. Winnemucca District, Winnemucca, Nevada. 61 pp. + appendices.

California Department of Fish and Game, Natural Diversity Data Base. 2002. Potentilla basaltica element occurrence records for California. Full condensed report. Natural Diversity Data Base, Sacramento, California. 1 pp.

California Native Plant Society. 2001. Inventory of Rare and Endangered Vascular Plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society, Sacramento, California. 338 pp.

Knight, T.A. 1990. Status report: Potentilla basaltica Tiehm and Ertter. Unpublished report prepared for the U.S. Fish and Wildlife Service, Reno, Nevada. 25 pp.

Minshall, G.W., S.E. Jensen, and W.S. Platts. 1989. The ecology of stream and riparian habitats of the Great Basin region: A community profile. Biological Report 85(7.24). U.S. Fish and Wildlife Service, National Wetlands Research Center, Slidell, Louisiana. 142 pp.

Nachlinger, J. 1991. Ecological survey of Soldier Meadow, Humboldt County, Nevada. Unpublished report prepared for the Bureau of Land Management, Winnemucca, Nevada. 26 pp.

Nevada Natural Heritage Program. 2001. Detailed rare plant and lichen list, March 30, 2001. Nevada Natural Heritage Program, Carson City, Nevada. 16 pp.

Tiehm, A., and B. Ertter. 1984. Potentilla basaltica (Rosaceae), a new species from Nevada. Brittonia 36(3):228-231.

U.S. Fish and Wildlife Service. 1997. Recovery Plan for the Rare Species of Soldier Meadows. Portland, Oregon. 50 pp.

LISTING PRIORITY (place * after number)

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5*
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Kenneth McDermond April 8, 2002
Acting Manager, Date
California/Nevada Operations
Fish and Wildlife Service

Concur: Steve Williams June 3, 2002
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Director's Remarks: _____

_____

_____

Date of annual review: February 2002
Conducted by: _____

Comments: _____

_____

_____

(rev. 1/02)